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Cair faz parte da vida: Fatores de risco para quedas em idosos

Falling is a part of life: Falls risk factors to the elderly

Caer hace parte de la vida: Factores de riesgo para caídas en ancianos

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ABSTRACT

Objective: To identify the prevalence of falling among the elderly living in urban areas and analyze the risk factors associated with falls. **Method:** quantitative, cross-sectional and descriptive study, to which attended 368 seniors. The data were collected with the support of an instrument with demographic issues and the Mini Mental State Examination. To analyze, the descriptive statistics and chi-square test were used. **Results:** It was found that 53% of the elderly have fallen in the last six months, the main cause is related to inadequate domestic environment. 46.7% of the elderly who fell were using drugs. Among the elderly who were not studied, 67.64% had cognitive impairment and, of these, 47.8% have fallen; of the 35.54% elderly who have education and exhibit cognitive impairment, 44.1% have had falls. **Conclusion:** The knowledge of risk factors for falls among the elderly favors the implementation of actions aimed at maximizing the quality of life and prevent falls in the elderly.

Descriptors: aged, accidental falls, cognition, nursing.

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RESUMO

Objetivo: Identificar a prevalência de quedas em idosos residentes em área urbana e analisar os fatores de risco associados a quedas. **Métodos:** Pesquisa quantitativa, transversal e descritiva, da qual participaram 368 idosos. Os dados foram coletados com auxílio de um instrumento com questões sociodemográficas e o Mini Exame do Estado Mental. Para análise foi utilizada a estatística descritiva e teste qui-quadrado.

Resultados: Verificou-se que 53% dos idosos apresentaram queda nos últimos seis meses, cuja principal causa tem relação com ambiente doméstico inadequado. 46,7% dos idosos que caíram faziam uso de medicamentos. Dentre os idosos que não estudaram 67,64% apresentaram déficit cognitivo e, destes, 47,8% caíram; 35,54% dos idosos que possuem escolaridade e apresentam déficit cognitivo, 44,1% deles tiveram quedas.

Conclusão: O conhecimento dos fatores de risco para quedas em idosos favorece a implantação de ações com o objetivo de maximizar a qualidade de vida e prevenir quedas em idosos.

Descritores: idoso, acidentes por quedas, cognição, enfermagem.

RESUMEN

Objetivo: Identificar la prevalencia de caídas en ancianos residentes en área urbana y analizar los factores de riesgo asociados con las caídas. **Método:** Pesquisa cuantitativa, transversal y descriptiva, de la cual participarán 368 ancianos. Los datos fueran recogidos con la ayuda de un instrumento con cuestiones socias demográficas y el Mini Examen del Estado Mental. Para analice fue utilizada la estadística descriptiva y test qui-cuadrado.

Resultados: Se verificó que 53% de los ancianos presentarán caída en los últimos seis meses, cuya causa principal tiene relación con el ambiente doméstico inadecuado. 46,7% de los ancianos que cayeron hacían uso de medicamentos. Entre los ancianos que no estudiarán 67,64% presentarán déficit cognitivo y, de estos, 47,8% cayeron; 35,54% de los ancianos que poseen escolaridad y presentan déficit cognitivo, 44,1% de ellos tuvieron caídas. **Conclusión:** El conocimiento de los factores de riesgo para caídas en ancianos favorece la implantación de acciones con el objetivo de maximizar la cualidad de vida y prevenir caídas en ancianos.

Descriptores: ancianos, caídas accidentales, cognición, enfermería.

INTRODUCTION

Worldwide, the number of people aged 60 and over grows rapidly higher than any other age group, and this raises the discussion of the events that can lead to disability at this stage of life. Among them, stand out the falls, repetitive in most elderly. More than a third of this income falling every year in the world and, in half the cases, the falls are recurrent¹.

Over the years, the elderly are more vulnerable to situations that can lead to loss of autonomy and independence and, in this scenario, falling is recurrent. This event in the elderly has a high prevalence, and may result in complications including fractures and death. Moreover, most often causes temporary restriction of mobility, often for fear of falling again, which leads to changes in the performance of simple daily activities and loss of independence². Thus, elderly falls is considered a public health problem and efforts should be made to prevent it.

In Brazil, approximately 30% of people aged 65 or older, who live in communities, has a fall event every year, and half

of them presents multiple falls. The resulting injuries from these falls represent the sixth leading cause of death among the elderly in this age group³. Note the fact that the falls can be markers for emergence of other problems, and cannot therefore be analyzed independently or in isolation, but as an occurrence that should always be investigated. The identification of factors associated with falls in the elderly can contribute to elucidating causal phenomena, enabling the development of preventive measures, both individually and collectively⁴.

Falling is a multifactor event and may be derived from an interaction between intrinsic and extrinsic factors, and the probability of their occurrence increases as the risk factors accumulate⁵. Extrinsic causes are those dependent on environmental obstacles that cannot be overcome by the elderly or social risk situations; and root causes are due to physiological changes associated with aging, such as diseases and use of drugs¹.

Whereas the falls among the elderly are a public health problem, it is essential to obtain knowledge about this topic and join systematically data on the magnitude, characteristics and consequences. This justifies this study, which objectives are to identify the prevalence of falls among the elderly living in urban areas and to analyze the risk factors associated with falls in this population.

For the health team, understanding and identifying the relationship between the prevalence of falls among the elderly and the risk factors associated with them enables proposing qualified interventions towards promoting safe environments and measures aimed at improving the living conditions, thus enabling the prevention of elderly falls.

METHOD

This is a quantitative, cross-sectional and descriptive study conducted with elderly individuals of both genders in the north urban area of Rio Grande do Sul, Brazil. The study enrolled 368 elderly, who met the following inclusion criteria: age less than 60 years and not be institutionalized.

Data were collected from March 2011 to July 2012, obtained with the aid of two instruments. One with socio-demographic questions, relating to the identification of the subjects (age, sex, marital status) and social profile (education, income); Intrinsic conditions for falls (physical activity, presence of diseases, visual and auditory status, medication use); occurrence of falls in the last six months, frequency and consequences; and information about the extrinsic conditions (location, type and road conditions, presence of stairs, ramps and handrails at the scene, lighting, presence of carpets and objects). The other instrument was the Mini Mental State Examination - MMSE, which enables investigate cognitive function, composed of questions grouped into seven categories, each designed with the objective of evaluating components of cognitive function related to time-spatial orientation (5 points each), retention or data record

(3 points), attention and calculation (5 points), memory (3 points), language (8 points) and constructive and visual capacity (1 point)^{6,7}. The MMSE score can range from 0 to 30 points. It has scores of different courts, where the cutoff point for uneducated elderly is 20, scores below this value are indicators for cognitive impairment and, for seniors with education, the cutoff point is 24, scores below this value are indicative of decline cognitive^{6,7}.

Data were analyzed using SPSS (Statistical Package for Social Sciences) for Windows. For analysis were used descriptive statistics (crosstabs, mean, range and standard deviation) and Chi-square test. The significance level $p < 0.05$ was adopted for all analyzes.

The research project was approved by the Ethics Committee of the Federal University of Santa Maria (UFSM) under the number 0052.0.243.000-11 and followed the ethical principles of research involving human beings, according to resolution 196/96.

RESULTS

The study included 368 elderly people of both genders, living in urban areas, with ages ranging 60-96 years, mean of 71.89 ± 7.67 . Among the elderly participants of the study, 64.9% were female and 35.1% male. The sample had schooling incomplete primary education (74.2%) and prevalent marital status married (46.5%). On family income, 42% received less than 1 (one) minimum wage. Of the respondents, most (51.6%) lived with a partner (a) and 20.7% lived alone (Table 1).

Table 1 - Sociodemographic and economic characteristics of the elderly respondents. Rio Grande do Sul - Brazil 2012.

Variables	Female n(%)	Male(%)	Total n(%)
Age			
60 ----70 years	105(28,5)	56(15,2)	161(43,8)
70 ---- 80 years	93(25,3)	54(14,7)	147(39,9)
80 years or more	41(11,1)	19(5,2)	60(16,3)
Education			
Never went to school	24(6,5)	10(2,7)	34(9,2)
Incomplete Elementary School	176(47,8)	97(26,4)	273(74,2)
Complete Elementary School	8(2,2)	8(2,2)	16(4,3)
Incomplete High School	7(1,9)	4(1,1)	11(3,0)
Complete High School	20(5,4)	5(1,4)	25(6,8)
Complete College	4(1,1)	5(1,4)	9(2,4)
Marital Status			
Married	81(22,0)	90(24,5)	171(46,5)
Single	19(5,2)	3(0,8)	22(6,0)
Widow(er)	104(28,3)	25(6,8)	129(35,1)
Divorced	33(9,0)	10(2,7)	43(11,7)
With mate	2(0,5)	1(0,3)	3(0,8)
Family Income			

(To be continued)

(Continuation)

Less than a MW*	3(0,8)	0	3(0,8)
Up to one MW	113(30,7)	42(11,4)	155(42,1)
Up to two MW	91(24,7)	62(16,8)	153(41,6)
Up to three MW	20(5,4)	16(4,3)	36(9,8)
More than four MW	12(3,2)	9(2,5)	21(5,7)
Living			
Alone	61(16,6)	15(4,1)	76(20,7)
Spouse/Life partner	89(24,2)	101(27,4)	190(51,6)
Offspring	65(17,7)	10(2,7)	75(20,4)
Grandchild	9(2,4)	0	9(2,4)
Other	15(4,1)	3(0,8)	18(4,9)

* MW = minimum wage

It was found that 195 (53%) of seniors had at least one episode of falling in the last six months prior to the questionnaire. The occurrence of fallings was observed in 37.8% and 15.2% of women and men, respectively. The elderly who have suffered some kind of loss, 44.6% reported diagnosis of diseases characterized as chronic. It is noteworthy that were prevalent cardiovascular disease (35.8%) and osteoarticular (14.2%).

Regarding the intrinsic factors related to falls, 46.7% of the elderly who fell were already using at least one type of medicine; 42.4% of them used glasses and, when asked about the classification of his vision, 21.5% said it was bad.

Can be seen in Table 2, most of the causes of falls in elderly respondents was related to inadequate domestic environment: 39% that fell had stairs in residence; 28.3% did not have non-slip flooring on the stairs; 32.9% did not have handrails on the stairs and 37.2% had no signs on the stairs.

Table 2 - Risk factors for falls among the elderly. Rio Grande do Sul - Brazil 2012.

Risk factors *	Falls Occurrence **		
	No n(%)	Yes n(%)	Total n(%)
Ladders			
No	54(14,7)	51(13,9)	105(28,5)
Yes	117(31,8)	144(39,1)	261(71,5)
The ladder has non-slip floor			
No	85(23,1)	104(28,3)	189(51,9)
Yes	32(8,7)	40(10,9)	72(19,6)
The ladder is signaled			
No	112(30,6)	136(37,2)	248(67,8)
Yes	5(1,4)	8(2,2)	13(3,6)
The ladder has handrail			
No	101(27,4)	121(32,9)	222(60,9)
Yes	16(4,3)	23(6,9)	39(10,6)
The rooms have ceramic floors ****			
No	43(11,7)	36(9,8)	79(21,7)
Yes	127(34,5)	156(42,4)	283(77,2)
Ceramic is nonslip *****			
No	114(31,0)	134(36,4)	248(67,7)
Yes	13(3,5)	21(5,7)	34(9,2)

(To be continued)

(Continuation)

The rooms have carpeted floors, smooth surfaces **			
No	89(24,2)	89(24,2)	178(48,9)
Yes	80(21,7)	106(28,8)	186(50,5)
The home has messy environments *			
No	151(41,0)	168(45,7)	319(87,2)
Yes	19(5,2)	27(7,3)	46(12,5)
Height of chairs and toilet			
Normal	171(46,5)	190(51,6)	361(98,6)
Low	0	5(1,4)	5(1,4)
Chairs have arms *			
No	114(31,0)	122(33,2)	236(64,7)
Yes	57(15,5)	72(19,6)	129(35,1)
Do you make use of objects that are out of reach			
No	116(31,5)	126(34,2)	242(66,3)
Yes	55(14,9)	69(18,8)	124(33,7)
Use slippers with slippery soles *			
No	135(36,7)	142(38,6)	277(75,8)
Yes	35(9,5)	53(14,4)	88(23,9)

^a Statistical test of the relationship between risk factors and no significant occurrence of falls ($p > 0.05$)

* A case unreported

** Two cases unreported

**** Four cases unreported

***** Five cases unreported

The floor of the home environment is another risk factor for falls. In the research, it was identified that the tile floor was prevalent, and that 42.4% of the elderly who have suffered falls have tile floors at home, in which 34.2% reported that the tile floor is not non-slip.

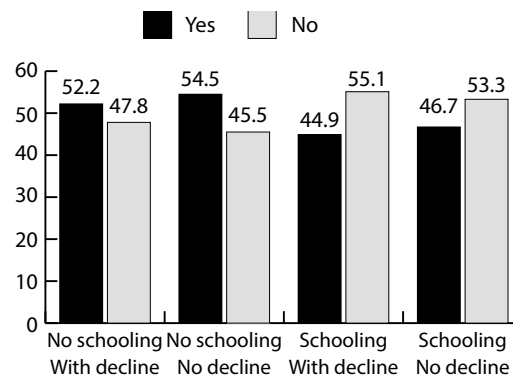
Regarding furniture and objects from the home environment, which are risk factors in the daily lives of the elderly, include carpets and smooth surfaces, and 28.8% of the elderly have such factors in their homes. The elderly who have suffered falls, 45.7% did not live in disorganized environments and 34.2% had no objects hard to reach. Concerning the height of the chairs and toilet 51.6% was normal, but 33.2% had armless chairs/support. Already on the use of slippers with slippery soles, 38.6% of the elderly who fell did not use.

Were also identified in the survey the physical consequences after the falls. The most frequent were fractures, indicated by 18.2% of the elderly, then the cases requiring hospitalization, with a percentage of 17.4%.

Was also conducted the evaluation of cognitive function using the Mini Mental State Examination (MMSE). It was found that 38.52% of the elderly showed cognitive decline, regardless to education level. Among those who have no education and have cognitive decline, 47.8% had at least one fall in the last six months. Among those who attended formal

education and have cognitive impairment, 55.1% of them fell, as shown in Figure 1.

Figure 1 - Distribution of the elderly, according to cognitive function, education and presence or absence of falls. Palmeira das Missões/RS, Brazil, in 2012.



* $p > 0.05$ compared to the presence of falls with and without schooling and cognitive level.

DISCUSSION

In the data analysis, it was found that in the study group there was a predominance of people aged 60 to 70 years, although there was also a significant percentage in the range over 70 years. This indicates the confirmation of official data showing a progressive increase in life expectancy, which in 2011 was 74.08 years⁸.

It was observed that 74.2% of the elderly had incomplete primary education. This reality points to the presence of lower education of the elderly. In this context, are explained why and the importance of many public initiatives and non-governmental actions to turn to literacy and adult and elderly education, since these factors influence the social, economic and the search for health services⁹. Also, it is understood that health professionals should pay attention to the elderly education, as it has repercussions in the way of understanding the aging process, its pathological conditions and necessary care.

In relation to marital status, there was a predominance of elderly living with a spouse or partner (51.6%). This data is similar to another study that aimed to assess the incidence and risk factors for falls among 684 seniors in the District of Colombo/Sri Lanka, where most of the elderly (53.8%) had companion¹⁰.

The prevalence of falls in the study population was 53%, a percentage higher than that found in the national literature, since in the cross-sectional study conducted in the city of Fortaleza/CE, 42% of elderly respondents reported at least one episode of fall in the two years prior to interview⁵. Another survey, also conducted in Brazil with a sample of 420 individuals aged 65 years or older, found a prevalence of falls in the last year of 32.1%¹¹.

The female gender, history of fractures, inactivity and change the functional balance are some of the risk factors

for falls in the elderly^{9,11}. Regarding gender, data from this study also show a greater association of these events with the female, which was observed in other Brazilian studies^{9,12}. This condition seems to be related to the greater longevity of women in relation to men, since they have been given less exposure to certain risk factors, lower prevalence of smoking and alcohol use and differences in attitude towards disease and disabilities¹¹.

Similar to other work¹², elderly participants of this investigation, who have fallen, made use of at least one medication. The number of drugs was also a risk factor for falls in the elderly of a study conducted in Japan¹³, in which the use of three or more drugs associated with increased risk for falling. Thus, it is important to indicate the use of drugs, establish a careful evaluation of the real needs of its use or dosage adjustment, reducing the risk of falls.

Among the study population there was a significant number of elderly who wore glasses (42.4%), and 21.5% reported having a bad view. In a study of elderly in the north of the city of Juiz de Fora, MG/Brazil, with respect to regular or bad perception regarding the vision, it was reported by 60% of the elderly¹¹. These data are ratified by an investigation conducted with elderly, home-based, which identified large contingent of elderly using glasses (56.5%)⁹.

As for what caused falls, the most common extrinsic factors were stairs without handrails and signaling (33% and 37.2%). A study of 602 elderly in a Japanese community also showed that the main cause of the fall was related to extrinsic factors, but these were related to tripping and slipping¹³. This demonstrates the importance of elderly housing adequacy to prevent the fall. In this context, specific intervention programs can be implemented in order to reduce the risk factors related to disability and, thus, falls events¹⁴⁻¹⁵.

The consequences of falls among the elderly met high number of fractures (18.2%) and cases requiring hospitalization (17.4%). Approximately 40% to 60% of episodes of falls result in some kind of injury, in that 30% to 50% are less severe, 5% to 6% can be considered more severe (not including fractures) and 5% fractures³. A study performed a systematic review of the literature on the consequences of falls in the elderly living in the community. Among the consequences, the most cited were fractures, but the fear of falling again also had high prevalence among the productions¹⁶.

The results of the present study show that the cognitive level did not constitute a risk factor itself for falls of the illiterate elderly, since the percentage of falls was similar in the group that have cognitive impairment compared to the group that does not have cognitive decline. However, studies¹⁵⁻¹⁷ with elderly point in their results that cognitive impairment is a predisposing factor for falls. Elderly people with cognitive deficits may have compromised protective responses and an impoverished judgment of the severity of his/her condition and their losses, with little or no awareness of the problem. This can lead them to an erroneous assessment

of their capabilities and to engage in risky activities, causing accidents¹⁸.

Cognitive deficiencies limit the judgment, attention and memory, and may predispose individuals to falls. Still, cognitive impairment may increase the risk function of falls related to direct effects on postural control, besides a compromised judgment, and visual spatial disorientation and behavioral changes related¹⁸.

The presence of dementia in the elderly cooperates to increase the risk of falls and, consequently, the occurrence of severe fracture. Elderly people who have dementia have higher falling rate. There are several features and shortcomings that may be related to the increase of falls and fractures among older adults. Among them, are the cognitive deficits that constitute an important cause of these characteristics¹⁹.

There is no single cause for falls, there is a combination of intrinsic and extrinsic factors, most of it occurs by inadequacies in the environment, considered as an extrinsic factor and, therefore, can be reconfigured in order to minimize the dangers to the occurrence of falls of the elderly. Similarly, the control of intrinsic factors, including the physical and psychological conditions of the elderly should be considered, as to reduce the risk of falls.

CONCLUSION

The development of a study related to the investigation of risk factors for falling in the elderly can contribute to the health professionals to be more attentive to a greater number of associations between home environment and causal factors. With the aging population, it is clear the importance of assessing the risk of falls among aging people, so its prevention can be performed.

The results of this study indicate that the prevalence of falls in the elderly living in the community is high and environmental factors have significant influence on the occurrence of this event. The high prevalence of elderly who have already fallen show data that impose the discussion and immediate action to reduce the causes of falls among this population. This study showed that there is need to take preventive measures with the greatest impact with the elderly, regardless to whether or not they are associated to cognitive decline. Also, give more attention to the home environment, the space in which occurred most falls among the elderly.

The collection of information by the elderly in the community becomes indispensable for public managers, since it assists in the implementation of strategies and political actions that may promote physical welfare, mental and social of the elderly based on their needs and health risk factors. They go beyond the field of health and become an economic and social problem. Falling is not unique to older people; however, it is in that social group that the problems arise from falls consequences.

This profile is also an essential component to be aware of social, demographic and specific health characteristics of the

studied population, because this information is not obtained from other data sources and is important to public health. Thus, such data can contribute to the planning of actions for the elderly by health professionals and managers, aiming at full elderly health.

Therefore, it is considered that the findings presented here can help and contribute to the construction of other studies related to the health of the elderly, with respect to matters relating to the care of this population stratum after an episode of loss.

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